

**A new cyclodorippoidea crab of the genus *Cyonomoides* Tavares, 1993 (Crustacea: Decapoda: Brachyura: Cyonomidae) from the Caribbean coast of Colombia**

Rafael Lemaitre and Adriana Bermúdez

(RL) Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560-0163, U.S.A.;

(AB) Universidad Nacional de Colombia, c/o Instituto de Investigaciones Marinas y Costeras, Apartado Aéreo 1016, Santa Marta, Colombia

*Abstract.*—A new Cyclodorippoidea crab species, *Cyonomoides fitoi*, of the family Cyonomidae Bouvier, is described and illustrated based on specimens collected from the upper slope region off the Caribbean coast of Colombia. This new species is the fourth known in the genus *Cyonomoides* Tavares, and the third from the western Atlantic. This new species is compared to its congeners, from which it is distinguished by features of the ocular peduncles, dorsal surface of the carapace, and spination on the dactyls of fourth and fifth pereopods.

*Resúmen.*—Se describe e ilustra una nueva especie de cangrejo Cyclodorippoidea, *Cyonomoides fitoi*, de la familia Cyonomidae Bouvier, en base a especímenes obtenidos en la parte superior del talud continental de la costa del Caribe colombiano. Esta es la cuarta especie que se describe en el género *Cyonomoides* Tavares, y la tercera que se conoce del Atlántico occidental. La nueva especie se compara con las otras del género, de las cuales se distingue por características de los pedúnculos oculares, la superficie dorsal del caparazón, y la presencia de espinas en el margen ventral de los dactilos del cuarto y quinto par de pereópodos.

---

As part of a study designed to inventory the benthic macrofauna from the continental shelf and upper slope region of the Caribbean coast of Colombia, a number of specimens representing a new crab species of the genus *Cyonomoides* Tavares, 1993, were collected. This genus was placed by Tavares (1993) in the family Cyonomidae Bouvier, 1898, within the Cyclodorippoidea Ortmann, 1892 (see Tavares 1991a, 1991b, 1994). Aside from the type species of *Cyonomoides*, *C. guinotae* (Tavares, 1991), from Cuba, Venezuela, and Brazil, at 592 to 1097 m, two other species have been placed in this genus, *C. cubensis* (Chace 1940), from Cuba, at 990 to 1005 m, and *C. delli* (Griffin & Brown 1975), from Australia, at 675 m. In species of *Cyonomo-*

*ides*, the carapace is subquadrate; the ocular peduncles are immovable, well calcified and fused at their bases, and lack corneae; the chelipeds are subequal; the second and third pereopods are long and have dorsoventrally flattened dactyls; the fourth and fifth pereopods are reduced and subdorsal in position with dactyls short and curved for grasping; and the abdomen in both males and females consist of seven free segments (including telson). The new species, the fourth in the genus, is herein described, fully illustrated, and compared to its congeners.

#### Material and Methods

Specimens were collected in November and December, 1998, as part of a joint pro-

gram (INVEMAR-Macrofauna I) between the Instituto de Investigaciones Marinas y Costeras, Punta de Betín, Santa Marta (INVEMAR), and the Smithsonian Institution, designed to inventory the invertebrate and fish fauna of the Colombian Caribbean upper slope zone. A 5-m-opening semi-balloon trawl net with steel doors built by Marinovich Trawl Co., Biloxi, Mississippi, and equipped with a cod-end having a 0.5-cm-mesh size net, was used. Sampling was conducted on board the B/I *Ancón*, a 20-m research vessel operated by INVEMAR. The holotype and some paratypes are deposited in the collections of INVEMAR; and paratypes in Instituto de Ciencias Naturales, Museo de Historia Natural, Universidad Nacional de Colombia (ICN-MHN), and National Museum of Natural History, Smithsonian Institution, Washington D.C. (USNM). Terminology used follows Tavares (1991). Measurements listed under material examined are in millimeters (mm), and are given in the order: total carapace length, including rostrum  $\times$  carapace width. The width of the frontal region is measured as the distance between the spines located near the base of each antennal peduncle. Abbreviations are: sta, station; ovig, ovigerous.

The images shown in Fig. 1 were prepared using a modified computer flatbed scanner following the methodology described by Reyes & Navas (2001). This method uses a scanner (HP SCANJET 4c) converted into a shallow aquarium 4 cm deep, and filled with water or alcohol. The specimens were immersed and held in place with weights, and scanned using DeskScan II (version 2.5) software. The images produced were processed using CorelPhoto Paint 8 (version 8.232), printed on high quality glossy paper, and mounted as a plate.

*Cyonomoides fitoi*, new species

Figs. 1–3

*Material examined*.—Holotype: ♀ ovig 4.8  $\times$  5.1 mm, INVEMAR-Macrofauna I, off

Bahía Portete, Guajira Department, sta C13, 12°29'19.2"N, 72°15'29"W to 12°28'58.8"N, 72°15'9"W, 22 Nov 1998, 450–430 m, INVEMAR-CRU 2066.

Paratypes: 1 male 3.2  $\times$  2.9 mm, 1 ♀ 5.3  $\times$  5.0 mm, INVEMAR-Macrofauna I, off Ciénaga Grande de Santa Marta, Magdalena Department, sta C44, 11°15'18"N, 74°38'19"W to 11°15'22.8"N, 74°38'46"W, 470–472 m, 4 Dec 1998, INVEMAR-CRU 2067.—♀ ovig 6.1  $\times$  6.2 mm, same data as previous specimens, USNM 276179.—1 ♀ 5.0  $\times$  4.9 mm, 1 ♀ ovig 4.9  $\times$  5.1 mm, Palomino, Guajira Department, sta C27, 11°27'3.6"N, 73°42'12"W to 11°27'14.4"N, 73°41'44"W, 490–494 m, 26 Nov 1998, ICN-MHN-CR 1861.

*Diagnosis*.—Carapace with strong, bifid or multifid hepatic spine on each side; dorsal surface with dense, sharp granules on anterolateral and lateral faces, and with less dense, mostly blunt granules centrally. Ocular peduncles subcylindrical, weakly divergent, and reaching slightly beyond distal margin of second antennal segment; armed with strong spines laterally and mesially. Dactyl of fourth and fifth pereopods with 4–6 corneous spines on ventral margin.

*Description*.—Carapace (Fig. 1) subquadrate, slightly narrowing anteriorly, with scattered setae. Regions weakly marked except for intestinal and cardiac regions. Dorsal surface covered with minute granules becoming smaller and less dense medially; anterolateral and lateral surfaces with dense, sharp granules or small spines; hepatic spine strong, bifid or sometimes multifid on one or both sides. Frontal region (Fig. 2a) about 0.4 times as wide as carapace width; margins minutely spinulose, laterally curving from base of rostrum around ocular peduncles and ending in strong spine near base of antennal peduncles. Rostrum prominent, triangular, reaching to about proximal third of ocular peduncles; margins spinulose, with well-spaced long setae; dorsal surface with small spines. Orbits lacking.

Ocular peduncles (Fig. 2a) subcylindri-



Fig. 1. *Cynomoides fitoi*, new species, paratype, ♀ ovig 6.1 × 6.2 mm, off Ciénaga Grande de Santa Marta, sta C44, USNM 276179. Scale equals 2 mm.

cal, strongly calcified, fused basally, immovable, and weakly divergent; exceeding distal margin of second antennal segment (in dorsal view); lateral and mesial margins armed with strong spines; dorsal faces with small spines. Corneae lacking.

Antennules well developed, long, exceeding antennal peduncle by about 0.8 length of penultimate antennular segment. Fourth (ultimate) segment smooth. Third segment with minute granules. Second segment with small sharp granules on lateral face. First segment very short, unarmed. Antennal peduncle (right antenna abnormally short in paratype illustrated in Fig. 2a) with lateral margins of second and fourth segments spinulose. Epistome with small median bifid spine just below base of rostrum; with small, blunt spine on each side near base of antennular peduncle.

Third maxilliped (Fig. 2b) minutely spinulose on outer surfaces of endopod, ischium, merus and palp; endopod narrow; ischium and merus subequal in length. Ischium with mesial margin densely setose; lateral margin spinulose; outer, distal margin with row of spines mesially. Merus ending in bluntly subtriangular extension with long marginal setae; mesial margin with spines, including 1 or 2 strong spines at level of

articulation of palp, lateral margin with spines. Palp about as long as merus; segments setose.

Chelipeds (Fig. 2c) subequal in size in both sexes; left and right similar in spination; with moderately dense, stiff setae on dorsal, ventral, and outer faces of segments. Fingers with cutting edges consisting of sharp edge lacking distinct teeth; tips curving inward; with several strong spines on dorsal (movable finger) or ventral (fixed finger) margins. Palm with several strong and well spaced blunt or sharp spines on dorsal and ventral faces. Carpus with few spines dorsally and on outer face distoventrally; with strong bifid spine on dorsomesial margin medially. Merus with strong spines on ventral margin; dorsal and lateral faces with small spines or tubercles. Ischium with dorsodistal spine and row of spines on ventrodistal margin; ventral face with small spines. Basis with row of spines on ventrodistal margin.

Second and third pereopods (Fig. 3a, b) long, third longest, exceeding second pereopod by about 0.3 length of dactyl, and about 3.7 times as long as carapace; segments covered with moderately dense, stiff setae. Dactyl broadly curved, terminating in calcareous tip; with row of small, well-



Fig. 2. *Cynomoides fitoi*, new species, paratype, ♀ ovig 6.1 × 6.2 mm, off Ciénaga Grande de Santa Marta, sta C44, USNM 276179: a, anterior portion of carapace, ocular peduncles, first and second antennular segments, and antennae (right abnormally developed), dorsal view; b, third left maxilliped, outer view; c, left cheliped, outer view. Scale equals 1 mm.

spaced spines on proximal third of dorsal margin. Propodus, carpus, and merus with well-spaced, often slender spines, and small blunt or sharp tubercles on all surfaces. Ischium with spines on all surfaces. Coxa with several strong spines on distolateral margin.

Fourth and fifth pereopods (Fig. 3c) reduced, reaching only to distal margin of merus of third pereopod when fully extended; segments covered with moderately dense, stiff setae. Dactyl (Fig. 3d, e) very short, terminating in sharp corneous claw; ventral margin with 4–6 corneous spines, and rounded protuberance proximally. Carpus with row of 2 or 3 strong spines on dorsal margin, and strong dorsodistal spine. Merus of fourth pereopod unarmed or with 1 or 2 slender spines on lateral and mesial faces. Ischium with row of strong slender

spines on ventral margin. Coxa with 1 or 2 spines on dorsodistal margin.

Female abdomen (Fig. 3f) with 7 segments, margins setose; surface minutely granulose, with scattered minute spines; telson width about 2 times the length. Male abdomen about as wide as that of female; telson width about 3 times length.

*Color*.—In life, generally brownish, fading to a straw color in alcohol.

*Etymology*.—This species is named after Mr. Adolfo González (affectionately nicknamed “Fito”), in recognition of the invaluable support he has given the junior author during her higher education, and for his encouragement to pursue her interest in marine research.

*Distribution*.—Known so far only from the Caribbean coast of Colombia, from off Bahía Portete on the north, to off Ciénaga

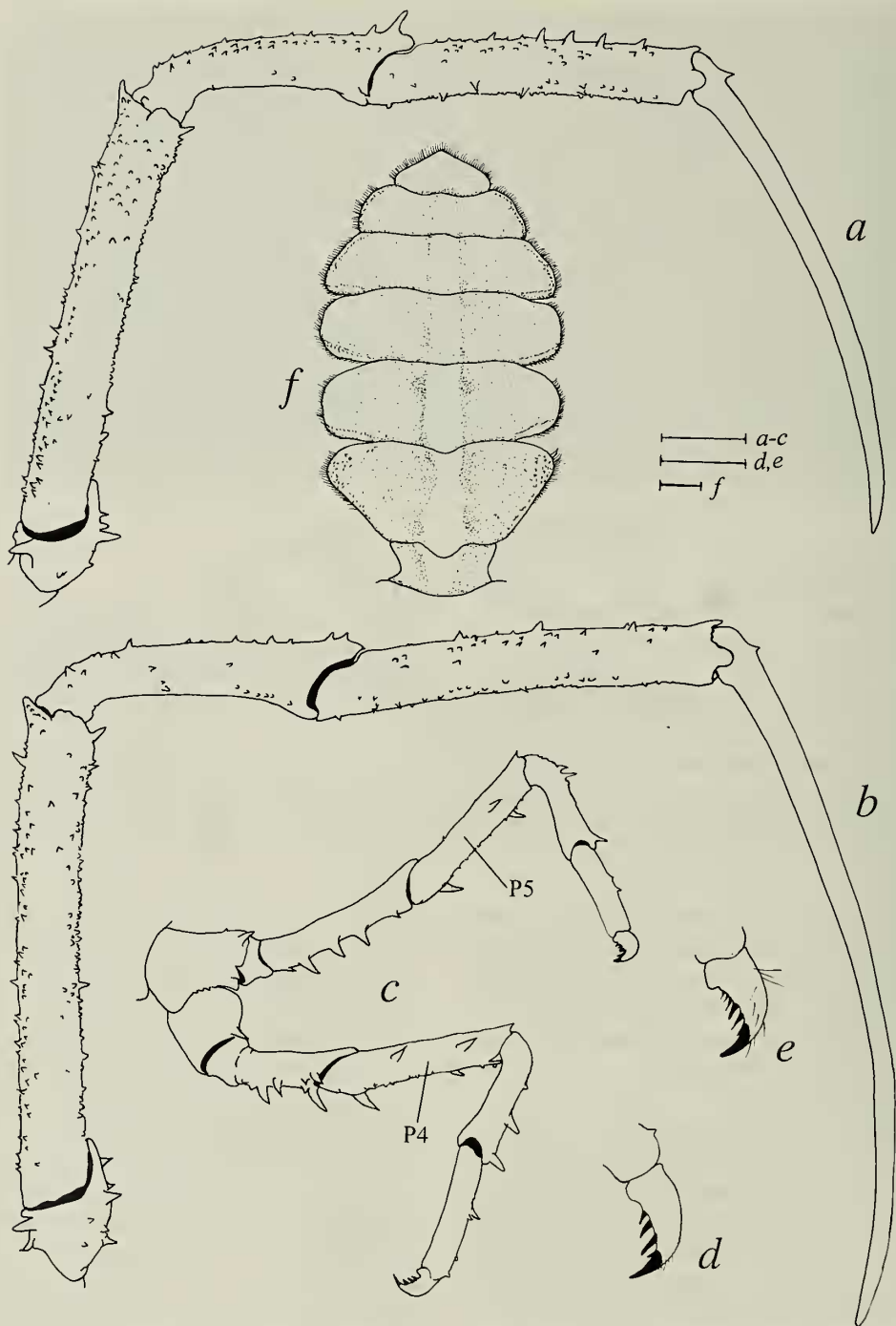


Fig. 3. *Cynomoides fitoi*, new species, paratype, ♀ ovigerous 6.1 × 6.2 mm, off Ciénaga Grande de Santa Marta, sta C44, USNM 276179: a, second right pereopod, lateral view; b, third right pereopod, lateral view; c, fourth (P4) and fifth (P5) right pereopods, lateral view; d, dactyl of fourth right pereopod, lateral view; e, dactyl of fifth right pereopod, lateral view. Scales equal 1 mm (a-c, f), and 0.5 mm (d, e).

Grande de Santa Marta on the south. Depth: 430 to 494 m.

*Remarks.*—Among the species of *Cyconomoides*, this new species is most similar to *C. cubensis*. The two differ primarily in features of the carapace, ocular peduncles, and dactyls of the fourth and fifth pereopods. In *C. fitoi*, new species, the granules on the dorsal surface of the carapace are not as dense and strong medially as in *C. cubensis*. The hepatic spine (Fig. 2a) in *C. fitoi*, is multifid and much stronger than in *C. cubensis*. The ocular peduncles (Fig. 2a) are weakly divergent and ornamented with strong spines on the lateral and mesial faces in *C. fitoi* while the peduncles are weakly armed laterally, have small spines mesially, and are strongly divergent in *C. cubensis*. The ventral margin on the dactyl of the fourth and fifth pereopods (Fig. 3d, e) is armed with four to six corneous spines in *C. fitoi*, whereas the ventral margin of the dactyl is unarmed or at most with low, blunt calcareous tubercles in *C. cubensis*.

*Cyconomoides fitoi* can be easily separated from *C. guinotae* by differences in the rostrum (Fig. 2a) which is prominent, subtriangular and reaches to about the proximal third of the ocular peduncles in *C. fitoi* while the rostrum is short and broad, and barely reaches the basal portion of the ocular peduncles in *C. guinotae*. *Cyconomoides fitoi* distinctly differs from *C. delli* in the ocular peduncles (Fig. 2a), which are subcylindrical in the new species but dorsoventrally flattened in *C. delli*.

#### Acknowledgments

We thank INVEMAR and its staff for cooperation and logistic support. Sampling cruises for this study were funded by grants to INVEMAR from the Colombian "Ministerio del Medio Ambiente," COLCIENCIAS (project cod 2105-13-079-97), and Bank for International Development (BID), which also made possible travel by one of us (AB) for a working visit to the National Museum of Natural History, Smithsonian

Institution, Washington, D.C. We are most grateful to Marcos Tavares, Universidade Santa Ursula, Rio de Janeiro, Brazil, for comments on the manuscript, and for sharing unpublished information. This is contribution #643 from INVEMAR.

#### Literature Cited

- Bouvier, E.-L. 1898. Sur la classification, les origines et la distribution des crabes de la famille des Dorippidés.—Bulletin de la Société philomatique de Paris, 8<sup>e</sup> série, 9:54–70.
- Chace, F. A., Jr. 1940. The brachyuran crabs. In Reports on the scientific results of the *Atlantis* Expeditions to the West Indies, under the joint auspices of the University of Havana and Harvard University.—Torreia 4:1–67.
- Griffin, D. J. G., & D. E. Brown. 1976. Deepwater decapod Crustacea from eastern Australia: brachyuran crabs.—Records of the Australian Museum 30(11):248–271.
- Ortmann, A. 1892. Die Abtheilungen Hippidea, Dromiidea und Oxystomata: Die Decapoden-Krebse des Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und z.Z. im Strassburger Museum aufbewahrten Formen. V. Theil.—Zoologische Jahrbücher, Abtheilung für Systematik, Geographie und Biologie der Thiere 6:532–588, pl. 26.
- Reyes, J. R., & G. R. Navas. 2001. El escáner convencional, una herramienta útil para la catalogación de organismos marinos.—Boletín de Investigaciones Marinas y Costeras (in press).
- Tavares, M. S. 1991a. Espèces nouvelles de Cyclodorippoidea Ortmann et remarques sur les genres *Tymolus* Stimpson et *Cyclodorippe* A. Milne Edwards (Crustacea, Decapoda, Brachyura).—Bulletin du Muséum national d'Histoire naturelle, Paris, 4<sup>e</sup> série, 12, section A, (3–4):623–648.
- . 1991b. Révision préliminaire du genre *Tymolus* Stimpson, avec la description de *Tymolus brucei* sp. nov. d'Australie occidentale (Crustacea, Brachyura, Cyclodorippoidea).—Bulletin du Muséum national d'Histoire naturelle, Paris, 4<sup>e</sup> série, 13, section A, (3–4):439–456.
- . 1993. Description préliminaire de quatre nouveaux genres et trois nouvelles espèces de Cyclodorippoidea Américains (Crustacea, Decapoda Brachyura).—Vie et Milieu 43(2–3):137–144.
- . 1994. Description de *Cyconomus leblondi* sp. nov. de Guadeloupe, avec une clef des *Cyconomus* américains (Decapoda, Brachyura, Cyconomidae).—Bulletin du Muséum national d'Histoire naturelle, Paris, 4<sup>e</sup> série, 16, section A, (1):203–208.